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PHYSIOTHERAPY IN RELATION TO DISEASES OF THE SKIN*

By HARRY E. ALDERSON, M. D., Clinical Professor of Medicine (Dermatology), Stanford University Medical School

In considering any form of therapy applied to skin diseases one must remember that the skin is an enormous organ with very extensive nerve, blood and lymph supply. Through these connections it may be profoundly influenced by bodily disturbances. Reversely, various impulses transmitted through stimulation or injury to the skin may have very definite effects on the internal organs. While there are, in one sense, strictly local dermatoses (for example, warts, callosities, epitheliomata, etc.), and local treatment alone may suffice to destroy them, often underlying bodily conditions are factors requiring careful consideration. A very large number of dermatoses are purely symptomatic. That is, they are skin reactions due to some internal disturbance. There may be other organic defects and symptoms that are of paramount importance, but the skin lesions can be seen; they may itch, burn, or be painful and assume undue importance in the mind of the patient. Only too often the physician may take this latter view and ignore more serious complications. Thus, an attack of boils may be treated entirely locally and a serious underlying diabetes mellitus overlooked. Or a case of acne may have a lot of light, x-ray and other physical therapy, and a serious anemia or thyroid disease be ignored. Or multiple telangiectases may be treated with the electric needle and a causative liver or splenic disease may be neglected.

So we must never permit ourselves to look upon the skin as though it were a detached part of the body.

Any measures that improve the general condition of the patient will have a good effect upon the skin. There are various forms of physiotherapy that are of very great value, but we have not time to discuss them now. Many a sufferer from some form of indigestion with a skin disease due to that cause has gotten rid of both his indigestion and his eruption by means of diet, systematic exercise, massage, baths and electrotherapy. There are some skin lesions that will disappear without local treatment when disturbances of metabolism are corrected. The medical treatment of a systemic disease like syphilis is so much more effective when auxiliary measures designed to build up resistance are carried out. We are finding baths and general ultraviolet treatments of great assistance in these cases. Likewise, the medical treatment of tuberculosis of the skin and other viscera is rendered more promptly effective when the patient's general

*Read at the meeting of Northern California Association of Physiotherapists in Sacramento, Apr. 30, 1928.

condition is improved by means of physiotherapy. Thus we depend upon general measures fully as much as we do on local therapy in dermatology and syphilology.

Time will permit only the brief discussion of auxiliary methods of treatment of a few commoner dermatoses.

Acne vulgaris, a disease of adolescence characterized by the appearance of pustules, papules and comedones, is influenced largely by internal factors. Thyroid, ovarian, testicular and other endocrine disturbances have to be considered carefully. Also anemia and gastrointestinal conditions may require attention. Medical and dietetic treatment are necessary here, but the tonic action of various physiotherapeutic procedures are of great assistance. Amongst these may be mentioned prominently baths, massage, exercises and various forms of electrotherapy. It must be remembered, however, that in massaging seborrheal skins oily preparations may produce pustules. Locally a great deal can be accomplished with ultraviolet light. It should be administered daily at first and as the skin becomes tanned and more resistant, the intervals may be increased. Reactions should be avoided, the aim being to gradually tan the skin. With patients who do not develop pigmentation this treatment is not so useful.

Alopecia areata symptomatic alopecia and other forms of baldness are benefited in various ways by physiotherapy. Where there is no local disease of the scalp, stimulation of the local circulation, and production of hyperaemia will bring more nourishment to the hair follicles. This can be accomplished best by use of the ultraviolet light and massage. Where the loss of hair is due to systemic toxemia, or to functional disturbance of the thyroid or other endocrine glands, medical or surgical treatment will be necessary, but massage, tonic baths or ultraviolet baths may be very helpful. Where there is a seborrheal condition or some other local crusting or scaling disease of the scalp, ultraviolet treatments along with suitable lotions or salves will be beneficial. Of course, the hair will have to be parted to permit the actinic rays to reach the scalp.

Carbuncle, furunculosis, erysipelas and other serious infections belong to the dermatologist or the surgeon. There are many dangerous possibilities here and furthermore there may be serious constitutional conditions underlying the same that require medical care. However, in convalescence physiotherapy may be of great value in rapidly bringing back the individual to his normal state of health.

Epithelioma is mentioned in some physiotherapy books as being amenable to ultraviolet and other forms of energy. It is hardly necessary to inform this audience that there is no scientific foundation for this claim. The *principal cause of cancer is repeated irritation* and stimulation will accelerate its growth, so halfway measures are dangerous. Anything short of early and complete destruction is futile.

Angiomata are very satisfactorily eradicated by Kromayer lamp

applications or by the use of the endothermy apparatus, the electrocautery, or electric needle attached to a galvanic battery. The choice of the agent, naturally, has to depend upon the size and location of the angioma. Spider naevi are satisfactorily destroyed by means of the microcautery or the electrocoagulation needle. In infancy vascular naevi respond very well to heavily filtered radium applications repeated at long intervals.

Pigmented and hairy naevi do not always call for removal, but where they are being constantly irritated, on account of the danger of malignant degeneration, they should be destroyed promptly and completely. Half-way measures are quite dangerous. Complete surgical removal is best and this is usually possible. Black or bluish moles are potentially very dangerous. A small blue black mole, if irritated by treatment or otherwise is apt to develop into rapidly metastasizing fatal melanosarcoma. Often it is far better to leave them alone, taking care only to guard against irritation. Pale brownish, hairy moles may be destroyed best by means of the cautery knife, although various electrical and thermic means are successful. Hairy moles call for electric needle destruction of the hairs first unless they are to be extripated surgically. It is surprising how many people with rapidly appearing moles think that by their destruction the development of others will be prevented. Often it is very difficult to talk such persons out of their determination to have something done.

Hypertrichosis produces much distress in the minds of some victims. It must be remembered that sometimes excessive hair growth is a symptom of endocrine pathology. The suprarenal and ovarian functions may be greatly disturbed by organic changes in these glands. Endocrinotherapy may relieve this condition and the sexual disorders related thereto. The majority of cases, however, do not present any underlying pathology, but the individuals may be greatly distressed and insist upon having the hairs removed. Carefully performed electrolysis with a very fine bulbous pointed needle gives the best results. Only the coarser hairs should be removed. There are x-ray machines, disguised under some other name, used for wholesale depilation. Their use is dangerous for, many months, perhaps a year later, atrophy, telangiectasis and other bad results of x-ray burns may appear. In some states the use of these depilating machines is prohibited by law. Where there is an abundant downy growth, sometimes bleaching by peroxide will render the same much less conspicuous and in time will tend to discourage further growth. Some individuals find the daily use of a fine pumice stone or paste most satisfactory. In time this will discourage hair growth.

Burns of the third degree tend to heal slowly. Granulations that are sluggish may be stimulated and epithelial growth aided by means of ultraviolet treatment. Exposure to sun and air or the quartz or carbon lamps may be utilized. These same remarks may be applied to the local treatment of ulcers of various sorts.

Eczemas of various kinds are successfully treated by physiotherapeutic methods combined with internal and other external therapy (medical, dietetic and applications of salves, powders, or lotions). In some cases cellular activity may be inhibited by measured doses of the Rontgen ray. In others where the process is sluggish, stimulating local applications of the ultraviolet light will be beneficial. Sometimes improvement of the general state of nutrition brought about by light baths, massage, and exercise will make the eczema more amenable to local treatment.

Purpura is a symptomatic condition characterized by small haemorrhages into the skin producing bluish spots which are very slowly absorbed.

Judiciously administered general ultraviolet "baths" are often of value, bringing the blood platelet count to normal, increasing blood calcium and checking the haemorrhagic tendency.

Psoriasis often responds to ultraviolet light therapy, but there are occasional cases where there is no improvement. There seems to be some change associated with pigment production that favors disappearance of the scaly plagues. All successful forms of treatment in this condition result in pigmentation (for example, arsenic administration, chrysarobin and other local applications). Lamp therapy should be applied to the entire body regardless of the location of the lesions. Sometimes, in addition, heavy doses of the ultraviolet light by means of the Kromayer lamp applied to obstinate individual lesions will act very well. Blistering doses may be necessary, and sometimes are justified, but it must be remembered that occasionally new lesions will appear in the adjacent skin as a result of excessive irritation. General pigment stimulation may prevent this, however. The inhibitory effect of actinic light on psoriasis is seen in the rare occurrence of lesions on exposed parts (face and hands), the tendency to grow worse during months when there is the minimum amount of sunshine, the tendency to improve during the sunny summer months and the rare appearance of the disease in the tropics, where there exists the maximum amount of sunlight. The local action of the ultraviolet light is a very important factor but there may be in addition systemic efforts which bring about improvement in these psoriatics.

Tuberculosis of various organs is improved greatly by the systemic effects of actinic light, fresh air, rest and diet. This is particularly true where the disease involves the skin, the lesions being available for direct local applications in addition to the general systemic treatment. Tuberculous ulcers, tuberculous warts, lupus vulgaris and erythema induratum, all are amenable to the local applications of the ultraviolet light, Rontgen ray, and various drugs. In the case of these various skin tuberculides, the resistance of the patient already is fairly high and the tubercle bacillus may be of attenuated virulence. Therefore any general measures that improve the patient's nutrition and resistance are of very great value. General applications of the ultraviolet

light will do this, as these rays increase the haemoglobin, raise the red cell and platelet count and improve metabolism. Applied directly to the lesions, they may have a germicidal effect and stimulate normal cell growth. These effects of the ultraviolet rays are of great value in the treatment of a large number of dermatological conditions, but are particularly useful in tuberculosis.

There are many physiotherapeutic procedures useful in dermatology, but we have not time to discuss them. The Rontgen ray, radium, the high frequency, the galvanic current baths, massage, exercise, etc., all are indispensable in our work. Only a few dermatoses have been mentioned, but it must be remembered that any forms of treatment that benefit the general health of the individual are of value, for the skin is just as dependent an organ as is the liver, intestines or various other structures and many of its diseases really are only symptoms.

The practice of dermatology is the practice of medicine with the application of special knowledge of the various dermatoses. The practice of medicine embraces the use of drugs, the knife and a great variety of physiotherapeutic procedures which in the right hands often are more useful than any other agents. In the wrong hands impossible things may be attempted, extravagant claims made for these methods and great discredit may thus be brought upon the same. Your association stands for the same ideals as the medical profession and we welcome the opportunity to work with you. Medicine cannot get along without Physiotherapy and Physiotherapy cannot succeed without medicine.

PASSIVE MOTION—ITS PLACE IN THE TREATMENT OF STIFFENED JOINTS

By DR. E. W. CLEARY, San Francisco

Passive motion of a joint is any motion in the joint accomplished by exertion of a force other than active contraction of the muscle elements normally controlling that joint.

It is apparent, therefore, that the term passive motion covers a wide variety of procedures. These range from the purely manipulative or mechanical movements of an entirely paralysed joint to the assisted active movements of a join whose natural muscle motors are functioning nearly, but not quite up to normal range. Again, passive motion ranges from the abrupt and radical breaking of adhesions under anaesthesia to the gentle and gradual stretching of tissue, brought about by a weight placed over the hot pack to sag, for instance, a stiffened shoulder, during treatment.

Passive motion also results from the stretching strain of the body weight upon joints of the upper limb, in hanging by the hands or the recurrent strain upon the joints of the lower limbs and spinal column, in standing or walking.

It is inevitable that a medium of such potent and wide-spread usefulness should occasionally be subject to misapplication and abuse. Ill-advised violence on the one hand and hesitant timidity on the other, with a certain type of perfunctory routinism, in treatment, somewhere in between, have each contributed a share toward the discrediting of passive motion.

In no other field has passive motion flourished more indiscriminately than in the treatment of our greatest aggregation of joints—the spinal column. Complete cults of healing have been founded upon nothing more nor less than passive motion to the spine. Like the ancestors of the pugnacious O'Briens who "niver sprung *from* nobody, but always sprung *at* thim," these cultists spring at and upon the human spine with enthusiastic abandon, and sometimes with fearful results.

Nevertheless, passive motion of the spine administered with proper skill and caution to cases of stiff and painful back, selected with due regard for scientific fact and accuracy of diagnosis, is a very potent measure of relief.

No other means utilized by physiotherapists call for more patience, more intelligence and more inspiring personality on the part of the technician, than passive motion.

Patience is required even in the manipulation of joints under complete anaesthesia. Stretched soft tissues will tear disastrously and cartilage and cancellous bone, acting as a fulcrum, undergo damaging

distortion from too abrupt manipulation, where the same range of movement may be accomplished by slow, progressive advance without serious damage.

It is not the purpose of this paper to consider manipulation under anaesthesia further than to recognize such procedures as a form of physiotherapeutic passive motion subject to the same general rules for successful application, and the same possibilities of abuse, as the less radical forms of passive motion commonly employed by technicians.

To the successful employment of passive motion preparation is most important. Preparation applies to the environment, the technician, the patient, and the joint or joints to be cared for. Treatment rooms should be warm, well-lighted, well-ventilated, comfortably heated, quiet and spacious. The arrangement should avoid treatment of one patient under the observation of other patients.

Every effort should be made to place the patient in such a position reclining, sitting or standing, as will help him to relax and become easily pliable under the technician's hands. The patient's position must be secure as well as comfortable. He must feel that no sudden shifting of his balance by yielding of any support may bring a severe, unexpected strain upon his injured limb.

The technician should cultivate in herself the habit of appearing sure and confident, avoiding all appearance of haste. She should so concentrate her attention upon the treatment that the patient instinctively feels that she knows just what she is about. Her hands should be warm and smooth and when she takes hold of the limb to be treated, she should have placed herself in a position of mechanical advantage, such that neither fatigue nor poor balance may interfere with perfect control of her own body during the manipulation. Muscle spasm resulting from fear may block every effort where the patient lacks confidence in the sureness of the technician.

To demonstrate the value of these preliminary preparations, one has only to try, off-hand, to manipulate a stiff, painful shoulder, for instance, with the patient standing unsupported in the middle of the room and compare the result with that gotten with the same patient lying comfortably on a plinth, the technician standing back of the patient's head, with his body steadied against the end of the plinth.

The technician's hands should be warm and smooth and she should, in passive motions, strive to so grasp the limb under treatment that the very sureness and firmness of her grasp engenders confidence and helps the patient to relax, overcoming the initial muscle spasm.

Getting acquainted with the patient as well as with his injured members is the first business of the technician, where passive motion is to be given. Rarely, if ever, should an actual increase in range of motion be expected during the first treatments. Every patient is, to

some extent, a law to himself. Not until the technician is sure she has gotten him by the fear of the unknown and the new in his situation should she attempt vigorous measures.

The limb or joint to be treated should be prepared by preliminary heating. Either moist or dry heat may be used. I prefer moist heat in the form of whirlpool bath or hot packs. When the tissues have become well relaxed, softened and suffused with blood, then after gentle massage and a number of repeated movements within the range of easy motion, the joint should be stretched just once to the point where pain becomes severe enough to cause the patient to complain, and to resist. At this point, the joint should be held while one can count five slowly. This procedure must, of course, be varied to suit the individual case. Reaction to pain and muscular resistance differ as do the patients. The technician has to study each case and advance the scope of treatment according to her observations.

I do not approve of repeated stretchings at a single treatment, with movement of the joint through the range of free motion between each stretching. This savors of the old pump handle method, which was usually both cruel and inefficient. However, a valuable variation of the single progressive stretchings without relaxation may sometimes be made by releasing the strain upon the joint momentarily, just enough to relieve pain, and without more than the small movement necessary to get this effect, again stretching to the limit and holding for the count of five. This may be repeated four or five times if the technician observes that a little gain is being made each time and the evidence of painful reaction is not markedly intensified. Much passive motion treatment is accomplished by mechanical appliances under the control of the patient, by weights and action of gravity on the limb itself, by postural stretching, rubber band traction, etc.

One of the cleverest devices, which I have recently seen employed, is the use of two small automobile inner tubes, crossed over the patient's shoulders and hooked under the arches of his feet to increase flexion, in a case of restricted spinal motion and knee-joint flexion. A push of the feet was followed by an elastic recoil, which increased range of flexion. The so-called diamond splint, extensively used during the World War, to stretch stiff elbows in either direction, depends upon rubber band traction.

Three valuable criteria of the proper measures of passive motion, or stretching, are:

1. Visible and palpable swelling and discoloration after manipulation and persisting up to the time of the next treatment.

2. Increased pain and tenderness persisting up to the time of the next treatment.

3. Range of free motion possible at the beginning of the next treatment.

If there is definitely increased swelling or definite discoloration, if there is intensified soreness or decreased range of free motion at the time when the next treatment is to be given, the previous treatment has probably been too severe. Further treatment should be palliative only until the recation has subsided. Then only should passive motion be undertaken again, and at that time with such caution as previous experience dictates.

Every technician is familiar with the phenomenon of sticking points in a stiff joint. Improvement may progress according to a regular curve up to a certain degree, and there the curve of progress flattens out, and indicates no gain for a number of successive treatments. This situation should not discourage one. The vigor of treatments should be gradually increased as long as subsequent reaction does not become severe or cumulative. Often such a joint will again, after two or three weeks, show a rapid improvement. Sometimes temporary cessation of aggressive measures and an interval of merely palliative treatment by heat and massage will be followed by a decided gain.

Records are nowhere more essential than in the following of patients under passive motion treatments. In the beginning, very complete details should be set down. These should include not only graphs and recorded measurements of range of motion, but in addition, wherever practicable, dynamometric tests of strength of motion. Standardized circumferential measurements of muscle-groups controlling joints under treatments should be a part of the record. Circumferential measurements of the joint itself give accurate comparative data as to swelling, effusion, edema or thickening of periarticular tissues.

Patients requiring passive motion may be divided into three great groups, according to the etiology of their joint limitations. One thinks first of the traumatic group, then there is the great group whose joint infirmities are the result of disease, uncomplicated by trauma, and last the still greater group of habit contractures and postural joint disorders, many of which are so severe and crippling that chronic bad posture has indeed taken on the characteristics of a disease.

Considering the two great groups of traumatic and diseased joints, we have immediately the question when, after the incidence of trauma or during the course of disease, should passive motion be begun. For traumatic cases, the treatment should begin just as soon as it will not interfere with primary healing of torn and wounded tissues. It is obvious that stretching motions should not be made upon an area complicated by a skin wound, the lips of which have been brought together, until the skin has had time to heal. This ordinarily takes from 7 to 14 days. We must realize that the deeper tissues, such as muscle, fascia, tendon and bone, take considerably longer.

It may be as long as five or six weeks before tendon or joint capsular injury has sufficiently repaired to permit passive motion safely, but as a rule our tendency is to wait too long. It is better to begin earlier and more gently and advance cautiously, literally and figuratively "feeling the way."

Post-traumatic arthritis is often the result of trauma to articulating cartilaginous surfaces, and cartilage repairs very slowly. Passive motion uses the articulating cartilage-covered joint surfaces as a fulcrum in stretching periarticular tissues, and may thus seriously retard repair of already traumatized cartilage. Injudiciously severe passive manipulations may even be the initial cause of damaging compression of cartilage. This occurs too frequently in the manipulation of interphalangeal and meta-carpo-phalangeal joints. In these delicate joint engines, the bony and cartilaginous elements are so small and the contracting periarticular tissues may be so strong and dense that when severe passive manipulations are done, actual compression of the cancellous bone and flaking-off of cartilage may result. One sees at times a definite traumatic arthritis of finger joints from manipulations of a joint which was relatively remote from the actual field of injury.

Of all the larger joints, the elbow has to be passively manipulated with the greatest caution. We are all familiar with the unfortunate picture of the masses of periarticular callus and even the ossifying myositis which sometimes develop from too violent or ill-timed passive motion of an elbow.

Passive motion has little, if any, place in the treatment of acute arthritis resulting from disease. It is true that vigorous manipulation of an acute arthritic joint may repay the sufferer for the agonizing pain caused by the treatment, by a singularly rapid subsidence of inflammatory symptoms, thereafter, but such a beneficial result is too uncertain to justify the practice. The time for passive motion for such patients is after the acute reaction has subsided; then only after active motion has reached its limit and the general picture presents a reasonable hope for gain by more radical treatment.

The value of passive motion in preventing or correcting contractures after infantile paralysis is well recognized. One could wish that in these cases the measure were used more frequently for prevention and therefore needed less for correction.

The gaunt and unlovely spectre of postural distortion which stalks so-called civilized man often rises out of the soft beds upon which he lies. It may be engendered by the lazy or unbalanced muscular activity with which he carries on, or in another type of individual, the intense nervous strain under which he labors to accumulate dollars. The high strung business executive crouching at his desk all day may pride himself that he is not getting soft and flabby and yet may arrive at such a state of muscular balance that passive motion may be

necessary to stretch his shortened ham-strings, calves and erector spinae muscles. And madame with her absurd and monstrous high-heeled shoes creates her own peculiar brand of contractures, which often require passive motion for their relief.

Postural deformities are nearly, if not all, instances of the development of pathological conditions so severe as to demand passive motion for correction in individuals whose active muscular effort would, if properly directed and sustained, either have prevented deformity or accomplished its correction.

Thus, the study of postural defects shows us clearly that passive motion is closely linked with normal muscular activity and that passive stresses and strains occurring during the individual's normal routine help to keep the body fit. Passive motion properly administered by the Physiotherapist is then but an extension of the normal physical experience of the individual. The technician lends her strength that her patient may regain the function which it is beyond the power of his unaided muscles to recover.

THE AFTER TREATMENT OF HAND INFECTIONS AND HAND INJURIES*

By SUMNER L. KOCH, M. D.

The importance of correctly placed and adequate incisions in the drainage of hand infections has been pointed out so clearly by Kanavel in his book on Infections of the Hand[1] that it would seem

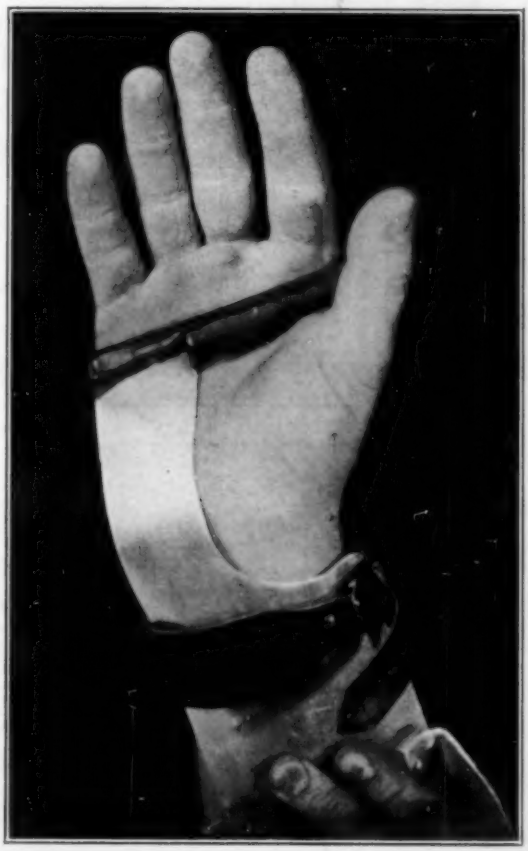

FIG. 1. SPLINT FOR MAINTAINING THE HAND IN THE POSITION OF FUNCTION.

*From the Department of Surgery, Northwestern University Medical School. Read before the American Physiotherapy Association, Minneapolis, Minn., June 13, 1928.

[1]Kanavel, Allen B. Infections of the Hand, Fifth Edition. Philadelphia, 1925.

unnecessary to mention it in a discussion of the after-treatment of hand infections and hand injuries, were it not for the fact that one too frequently sees cases in which the period of convalescence is prolonged, or in which secondary complications such as extensive con-

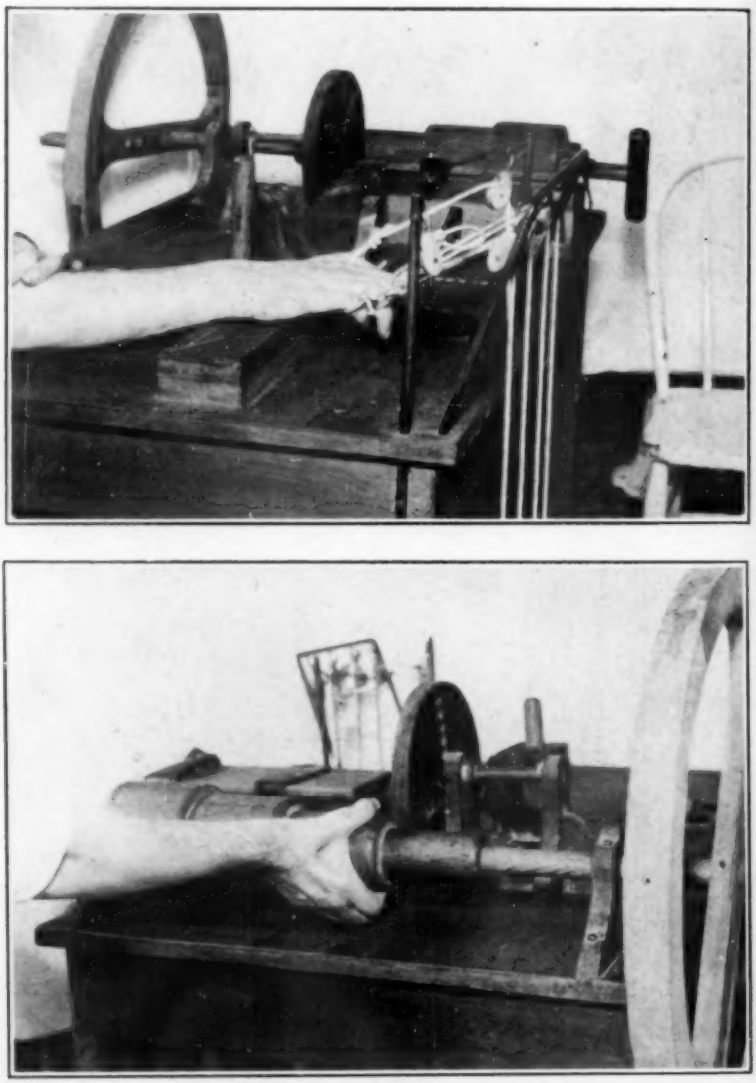

FIG. 2. TABLE WITH SIMPLE DEVICES FOR STIFF FINGERS AND WRISTS.

tractures, loss of tendons or involvement of the bones and joints have occurred, chiefly because the primary drainage incisions have been inadequate or incorrectly placed. In discussing, therefore, the methods to be carried out after operation, it is assumed that proper and adequate incisions to drain the affected area have already been made.

Immediately after operation, a big, sterile dressing, which extends as high as the shoulder, is applied to the affected extremity. This is kept warm by adding hot sterile water or boric solution every hour. In addition, hot water bottles are packed about the arm, or a large electric bulb is suspended above it and shaded in such a way as to deflect the heat over the moist dressing. If one can avoid adding a secondary infection to that which is already present, the chance of preventing necrosis of the tendons is greatly increased.

As soon as the infection is definitely localized, as evidenced by the subsidence of local symptoms and by the persistence of a normal temperature, instead of being kept continuously in a hot pack the hand may be soaked in a sterile hand bath for twenty minutes once or twice daily. After each soaking the hand is dried by exposure to the air or electric light for a half hour. This method of treatment permits early movement of the fingers, an important factor in preventing the formation of crippling adhesions and contractures, and prevents the extensive maceration and edema of the superficial tissues which occur when hot packs are maintained for a number of days.

As soon as the continuous hot dressings are discontinued, the fingers and hand should be moved once or twice at each dressing

FIG. 2. TABLE WITH SIMPLE DEVICES FOR STIFF FINGERS AND WRISTS.

through as complete a range of motion as possible. Such movements should be carried out gently and without force and although at first they may be limited by swelling and tenderness there should be a noticeable improvement from day to day. Too frequently one sees a hand that has been kept with fingers outstretched and with the hand in pronation for days or even weeks, sometimes even on a straight splint. Needless to say, restoration of function in such cases is rendered doubly difficult by reason of the prolonged immobilization, and the position in which the hand has been immobilized. To guard against such complications it is our custom to place the

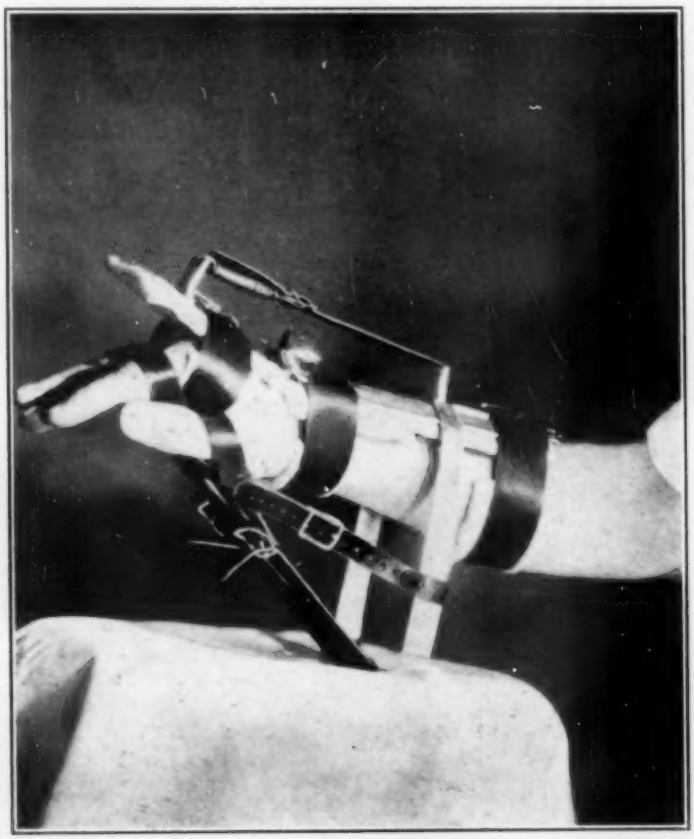

FIG. 3. SPLINT FOR BRINGING ELASTIC TENSION TO BEAR ON STIFF METACARPOPHALANGEAL JOINTS. (THE WIRE SPRINGS WHICH CONNECT THE LOOPS ON THE FINGERS WITH THE BUCKLES ARE NOT CLEARLY SHOWN IN THE PICTURE.)

resting hand as early as possible on a split that will hold the hand in the position of function (Fig. 1) with the wrist dorsi-flexed, and the fingers and thumb in the position that they would assume in grasping a ball or similar object. This can be done as soon as the intermittent soakings are begun. It can ordinarily be done at the same time that Dankinization of the wound is carried out, if the latter method of treatment is advisable because of suppuration or the presence of slouching tissue.

When the infection is under control, active physiotherapeutic treatment is begun. This includes soaking in hot water, baking with dry heat, exposure to the ultra-violet light, the use of diathermy, of

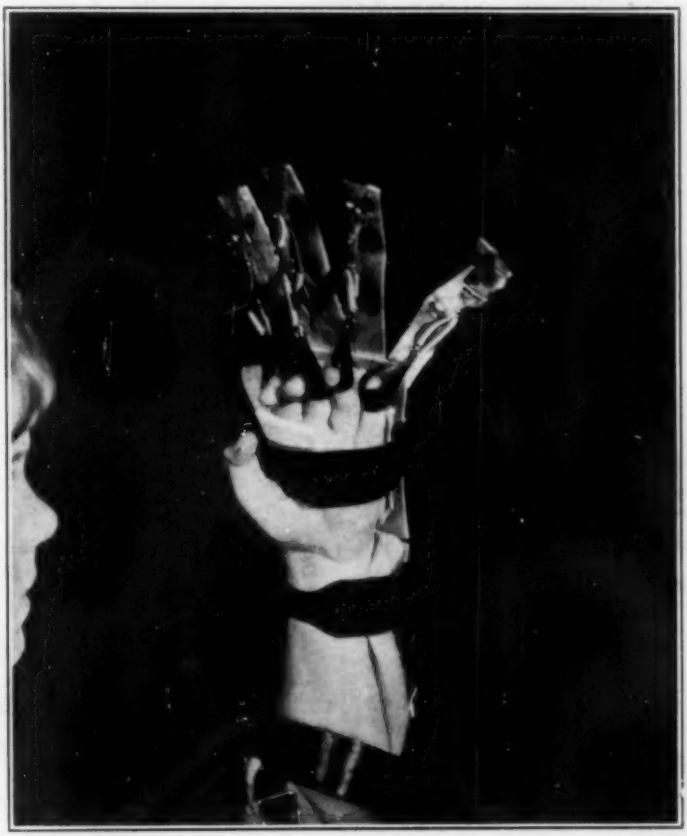

FIG. 4. SPLINT FOR BRINGING ELASTIC TENSION TO BEAR ON CONTRACTED FLEXOR TENDONS.

galvanic and faradic stimulation, the employment of massage, of passive and active movements, of various mechanical devices to aid in these movements, and the use of splints.

In view of the many advantages that are claimed for various physical and mechanical methods as therapeutic agencies, it may not be amiss to ask ourselves just what we hope to accomplish by such methods. In simple physiological terms they are: 1st, improvement of the nutrition of the tissues by stimulation of the blood supply; 2nd, improvement of muscle tone and strength by stimulation of the nerves controlling the muscles, when active movements are impossible, and by active movements as soon as they can be carried out; 3rd, the prevention of adhesions and scar tissue formation by early passive and active movements; and 4th, the stretching and softening of scar tissue that may already have formed.

The many therapeutic lamps, electrical appliances, hydrotherapeutic devices, etc., that are offered to us today are helpful only as they succeed in fulfilling these simple fundamental requirements. For stimulating the blood supply, the application of dry or moist heat in some form or of heat alternating with cold is of great value. Hot baths, the whirlpool bath, ultra-violet rays, and diathermy are all helpful. The value of massage in its various forms depends in part on the stimulation of the blood supply.

Prevention of adhesions and scar tissue and the stretching and softening of scar tissue must be accomplished by massage, by stretching, by active and passive movements and by the use of splints. The most important of these are active movements—i. e., movements voluntarily initiated by the patient, since they involve the normal stimulation of nerves and normal contraction of muscles, in other words the beginning, though it may be slight, of the return of normal function. Such movements should be encouraged by every possible means. Various mechanical devices designed for such an end have been described by Kanavel in Chapters 29 and 30 of his book on hand infections (Fig. 2). The use of splints that maintain the hand when at rest in the position of function and that help to stretch fibrosed tendons and stiff joints by the constant application of elastic tension (Figs. 3, 4) have been found to be of great service. Experience has shown that scar tissue can be stretched with impunity, but that adhesions and scars that are broken down by forcible manipulation under an anesthetic will recur and eventually be firmer and more extensive than ever.

THE CARE OF CRIPPLED CHILDREN WITH SPECIAL REFERENCE TO THE AFTER CARE OF POLIOMYELITIS CASES

By WINIFRED TOUGAS, Supervisor of Crippled Children, California State Department of Public Health

Community interest in the treatment of crippled children has developed remarkably during recent years. This is due, largely, to the efforts of the various state societies for crippled children and to the support of men's service clubs and women's organizations. The California Society for Crippled Children was largely instrumental in securing legislation in this state for the relief of physically handicapped children. The plan under which this law operates may be outlined as follows:

Needy, physically defective or handicapped persons under eighteen years of age and residents of California who should have necessary surgical, medical, hospital, physiotherapy, occupational therapy or other service, special treatment, materials or appliances for use in relieving their defective or handicapped condition, may now obtain any or all of these attributes at county expense under the provisions of the so-called "Crippled Child Act" of the 1927 Legislature. Treatment is provided only for handicapped individuals whose parents or guardians are unable to provide necessary treatment, either in whole or in part.

In order to obtain the benefits of the Act, parents or guardians may petition the Superior Court of the county wherein they are residents for a certificate setting forth the facts in the matter and if the Judge is satisfied that parents or guardians are unable to furnish treatment and appliances, either in whole or in part, he shall issue a certificate to that effect. Having obtained this certificate, the parents or guardians present it to the State Department of Public Health, whose duty it is to furnish the necessary treatment and services, materials or appliances, their upkeep and transportation, the expenses incidental to the provision of which are advanced from a revolving fund appropriated for the purpose. This does not mean, however, that the state bears the expense of treatment, for all money expended under the authority of the certificate constitutes a legal charge against the county from which the certificate is issued.

STATE MAY CONDUCT CLINICS

Physically handicapped persons who come under the provisions of this Act may be treated in hospitals or institutions, with which the State Department of Public Health may contract or by individuals, agencies or organizations approved and designated by the

Department. The law also gives the Department power and makes it a duty to arrange through local agencies for local public diagnostic clinics or conferences for physically defective and handicapped persons, whenever and wherever it may appear necessary, in order to bring such persons expert diagnoses near their own homes. County health officers, public health nurses and local physicians are generally informed regarding the times and places at which such clinics or conferences are held and full information concerning them may be obtained from such officials.

Through its employes and the agencies which it may cooperate, the State Department of Public Health maintains a strict supervision over such cases as may come under its care, visiting them when advisable and causing records to be kept showing their conditions and noting improvements that may occur. In order to carry out the provisions of the Act, the Department of Public Health appointed a Supervisor of Crippled Children, whose duty it is to cooperate with physicians and health officers, organizations, health centers and clinics for the purpose of determining the status of physically handicapped individuals and to bring them under proper treatment.

Parents or guardians who are able financially are expected to contribute in part toward treatment, appliances, their upkeep and transportation. The law enables the State Department of Public Health to enter into agreements with them to pay such amounts as they may be able toward the cost of service, equipment and its transportation. The law further empowers the State Department of Public Health to receive gifts, legacies and bequests to expend for the purposes outlined in the Act. It is stipulated, however, that no part of such funds shall be used for administrative purposes and the Boards of Supervisors may levy a special tax to provide funds for carrying out the purposes of the Act. Such tax, however, shall not exceed the sum of 3 mills on each dollar on the assessed valuation of the taxable property in the county.

COUNTIES MAY ACT INDEPENDENTLY

Counties of California are authorized also to provide treatment independently for needy, physically defective or handicapped persons under eighteen years of age. They may cooperate with the State Department of Public Health as already outlined or they may provide treatment directly, without taking advantage of the supervision of cases that is provided by the State Department of Public Health. In all cases where treatment is given without obtaining a certificate from a Judge of a Superior Court, it is essential that the consent of parents or guardians to the provision of care and treatment be obtained in writing.

The Crippled Child Act has been in operation less than a year. So far its beneficent provisions have been applied chiefly to children who have been paralyzed as a result of acute epidemic poliomyelitis, which was more widely epidemic throughout the state in 1927 than ever before in history. There were 1274 cases of this disease reported, many of which resulted fatally, and many of which resulted in handicapping paralyses. While the provisions of the Act may be applied to any type of physical handicap, it would appear that applications of its provisions will be made chiefly upon orthopedic cases. So far, practically all cases that have come within the provisions of the Act have been orthopedic. There is little need to recite the benefits that may be expectd through this piece of legislation. The results accomplished already are indicative of the tremendous amount of good to the children of California that will result from the application of this law. It is essential that an outline of the method by which the surveys and investigations of the Supervisor are made be given and it is proposed to outline in detail the activities of the Division of the State Department of Public Health that has charge of this important work.

SCOPE OF WORK UNDERTAKEN

The organization of local clinics, outside of the larger cities, is just beginning. Monterey County has held such a clinic recently and thirty cases were examined there. Glendale in Los Angeles County recently held a clinic where sixteen cases were examined. The San Joaquin County Orthopedic Clinic has been in operation for many months and has a very large attendance. As the state work grows, more surveys and the organization of more clinics in territory as yet uncovered will expand the activities of the division and will reach hundreds of crippled children who are amenable to treatment.

Poliomyelitis cases have been visited in twenty-four counties. In one county, there were seventy-one cases reported with twenty-four deaths. Four unreported cases were found. Out of twenty cases examined, fourteen need muscle training. Twenty cases out of the seventy-one had recovered.

In another county there were fifty-two cases reported with seventeen deaths. Six cases were examined; two need muscle training. Out of fifty-two cases reported in this county, thirteen cases had recovered.

The main form of treatment during the acute stage of poliomyelitis is rest, with prevention of deformities by casts, splints, etc. When the quarantine is lifted, which is after three weeks, the patient may be examined. If there is any tenderness, no massage or muscle training should be given, but heat, in the form of fomentations or baking, may be given to relieve it. When the tenderness has

disappeared, light massage and muscle training may be given, but never to the point of fatigue.

The examination is as follows: The exercises are graded according to the extent of the paralysis, always giving the active motion to the weaker of two opposing groups of muscles to bring the weaker up to the strength of the stronger group. If there are any contractures they must be passively stretched before any active motion may be given to the opposite group. A muscle that is gone, or has a trace of power or poor power, should be given an exercise with gravity eliminated. For example, with a poor abductor, exercise is given in the back lying position, and with a poor right quadriceps in the right side lying position, the exercise should always be given to the leg on which the patient is lying. A fair muscle may be given an exercise against gravity with no resistance, or with gravity eliminated but with resistance.

Exercises should be given only a few times each at first, probably three times, then increased gradually up to ten times. It is better to increase the resistance rather than to increase the number of times over ten that the exercise is given. Exercises should be given daily, six days a week. Precede the exercises by some form of heat and massage. The fatigue point must be watched and if patient does not make as active a contraction the eighth time as he did the first time, the exercise should be stopped. Each exercise should be given slowly and steadily and by count, as the patient then knows just when the contraction is to start.

MUSCLE TRAINING MOST IMPORTANT

Mechanical apparatus does not seem to be quite as beneficial in the treatment of poliomyelitis as muscle training. In exercises with mechanical appliances, patient is required to both flex and extend a joint whereas, in muscle training, the patient only makes an active contraction of the weaker group while the operator passively moves the part in the opposite direction. Electric treatments have not proved as beneficial, as this produces a contraction by an outside agent. Appliances should be worn to prevent deformities and to prevent muscles already stretched from becoming stretched further. Patient should be kept quiet so as to avoid fatigue.

Paralysis of the toe extensors and the anterior tibial causes a foot drop, which is often accompanied by a contraction of the Tendo Achilles if the gastrocnemius has fair power or better. The Tendo Achilles must be stretched before active exercises may be given to the dorsal flexors. Weak tibials throw the foot in eversion, which is a valgus deformity. Inversion is given as an exercise and a wedge shaped heel is put on the inner side of the shoe. When the peroneals are paralyzed the foot is thrown into inversion or a varus deformity and eversion must be given as an exercise. The other common foot

condition is a calcaneous deformity caused by a weak gastrocnemius. This is remedied by an extra heel, and plantar flexion is given as an exercise. The tibials are more often paralyzed than any of the other foot groups and are the slowest to improve. If the foot is badly deformed a brace should be worn, but if there is only a partial paralysis a lift on the shoe will suffice.

The most common knee deformity is hyperextension, due to either a weak quadriceps when the patient throws the knee backward to lock the joint or due to weak hamstrings that cannot hold the knee straight. Whatever the cause, a brace should be worn to hold the knee straight. Setting the quadriceps is the first exercise when that muscle is weak. Knee extension in the side lying position with the thigh in line with body and knee flexed so that the muscle is at a stretch to start is another exercise given to a weak quadriceps. Resistance may be increased in this position or the exercise given against gravity—sitting with the knee flexed over the edge of table, then extend knee. For the hamstrings, the easiest exercise is in the back lying position with the hip flexed and leg raised with knee extended, then flex knee against resistance. The flexion is assisted by gravity. In the side lying position with hip flexed and knee straight, then flex knee, is the next harder position. Knee flexion given in the prone lying position is the hardest position in which to give an exercise for the hamstrings.

The easiest position in which to give abduction is in the back lying position. The next position is the right side lying position for the left abductors. Adduction may be given first in the back lying position then in the right side lying position for the right adductors while operator holds the left leg in abduction.

Hip flexion should first be given in a side lying position for a poor flexor or for one that has less power. A fair hip flexor may be given an exercise in the back lying position flexing both hip and knee, and when it is stronger, flexing the hip with the knee extended.

With a poor gluteal group, or where the muscle has even less power, the exercise should be given in the side lying position. The harder position is prone lying with the legs extended beyond the table, starting with the hip flexed, then have patient extend hip.

This covers the chief muscle groups in the legs. Of course, all the exercises may be made more difficult by increasing the resistance.

The simplest exercise for weak abdominal muscles is abdominal retraction. Hip flexion with legs alternate or together may be given as the next harder exercise, if the legs are normal. Trunk flexion from a half reclining position and then from the back lying position are the most difficult for the abdominal muscles. For weak lateral abdominals, lateral side bending may be given in the back

lying position. This exercise may be made more difficult by giving it in the right side lying position for the left lateral abdominal muscles and vice versa.

Weak back muscles may be given an exercise in the side lying position, hyperextending the back with help, then against resistance. Prone lying is a harder position. This may be made more difficult by extending trunk over edge of table while legs are strapped down. This can only be given if the gluteal muscles are normal.

Exercises for the hand may be given in the sitting position, providing the patient's trunk muscles are strong enough. This gives the patient a chance to see just what is being done and the hand, supported on the table, is more relaxed. Flexion and extension of the fingers and wrist may be given with the hand resting on the table, little finger side down. Increase the difficulty of these exercises by placing the forearm on the table, with the hand extended over the edge, the exercise given against gravity.

Exercises for the interossei may be given with the forearm lying on table, palm down, spreading fingers apart and pulling them together again with help, then against resistance. Exercises for the oppenens pollicis, and thumb flexors and extensors may be given with the hand supported, and the movements given with help and then with resistance. Pronation and supination of the forearm should be given with the elbow flexed and the forearm supported on table with help and then against resistance.

For a weak biceps, an exercise may be given with the whole arm supported on table, little finger side of hand down, then flex the elbow with help. Increase the difficulty of this exercise by starting with whole arm at side, then have patient flex elbow.

Weak triceps may be exercised in the sitting position with the help of gravity, with the upper arm at side, starting with elbow flexed. To eliminate gravity, place whole arm on table, little finger side down, start with elbow flexed, then extend elbow with help, then with resistance; against gravity, upper arm extended vertically, start with elbow flexed, then extend it.

Exercise for a weak deltoid should be given in the back and prone lying positions for both anterior and posterior fibers. This may be given first with help, then with resistance. This exercise may be given sitting or standing to make it more difficult. For the posterior fibers the most difficult position is prone, lying with the arm at right angles to body, then lift arm from table.

A weak pectoralis major should be given horizontal adduction with the whole arm supported on the table, first with help, then with resistance. This may be made more difficult by giving it in the back lying position.

For the middle and lower fibers of the trapezius and the rhom-

boids, the easiest way is in the sitting position. In the prone lying position it is more difficult. For the upper fibers of the trapezius the exercise should first be given in the back lying position by hunching the shoulders, then in the sitting or standing position.

This is a bare outline of exercises for the chief muscle groups. Many varieties and combinations may be made according to the amount of paralysis. As the shoulder girdle is rather complicated with the different actions of the muscles, a very definite examination should be made.

If there is subluxation of the shoulder joint due to a weak deltoid, an abduction splint should be worn. With an ape hand, due to a paralyzed oppenens pollicis, an empty spool may be bandaged inside the palm of the hand, the thumb being curled around the spool. Also, an elastic band may be worn at night to hold the thumb over. Paralysis of the oppenens pollicis is very typical of infantile paralysis and is the one most often affected in the upper extremity.

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The Northern California Chapter, on Sept. 15, 1928, sent the following letter to more than five hundred doctors of San Francisco and the Bay Region:

NORTHERN CALIFORNIA ASSOCIATION
OF PHYSIOTHERAPY

San Francisco, Calif., Sept. 11, 1928.

Dear Doctor:

The Northern California Association of Physiotherapists is recognized by your State Medical Association. We wish your cooperation in maintaining our high standard for trained ethical technicians. We appreciate the definite therapeutic value of Physiotherapy when properly prescribed and administered and realize the discredit to legitimate medicine and the menace to our chosen field which may result from pseudophysiotherapy. Our members have adequately prepared themselves to do Physiotherapy. We recognize our limitations and

accept only those patients who are referred and prescribed for by regular physicians.

We ask you to aid us by employing members of this association. Membership is shown by the possession of a card.

We quote you our present qualifications for membership:

"The minimum educational requirement for charter and active members is that they shall have completed a four year high school course or its equivalent. In addition they shall have had two years of special instruction in physiotherapeutic subjects in a school accepted by the executive committee, or the equivalent, acceptable to the executive committee."

If your present technician is not a member, application for membership can be sent to our secretary, Mrs. Martha Palmer, 359 16th Ave., San Francisco, Calif.

If you wish to obtain a technician, inquire at our Registry Bureau, California Medical Association, Balboa Bldg., San Francisco, Calif. Telephone: Graystone 62.

Sincerely,

Northern California Physiotherapy Assn.,
MARTHA PALMER,
Secretary and Treasurer.

We believe this letter will prove an important step toward a cooperative spirit between physiotherapists and physicians.

It is, of course, too soon to discuss with any assurance the effect produced by this letter; still, it is worthy of comment that all responses so far received have been favorable. Some doctors have even stated that the letter might well have been couched in stronger terms.

It seems that the members of the medical profession are turning more and more toward the physiotherapist as the logical solution of the long and somewhat bitter struggle between legitimate medicine and osteopaths, chiropractors, and quacks. We feel, therefore, that it is more than ever important to do all we can to uphold the ethics of our profession.

Does the association as a whole feel that by this letter the Northern California Chapter has taken a step in the right direction?

B. R.

The regular meetings of the executive committee of the A. P. A. as required by the constitution will be held on Oct. 31, Feb. 27 and Apr. 24. All suggestions, questions and problems from both chapters and individuals are most welcome. The treasurer heartily appreciates the cordial response to the bills for dues. It is this interest and cooperation which makes the association a working unit. Convention of 1929 is already inciting its share of attention—again "suggestions, questions and problems" are in order.

A brochure of the Chartered Society of Massage and Medical Gymnastics came into our hands the other day. It is addressed to the members of the medical profession thus: "This brochure is sent to you by direction of the Council of the Chartered Society of Massage and Medical Gymnastics. Their objective is to familiarize you with the aims of the society—C. S. M. M. G.—and to draw your attention to the significance of these initials after the name of a masseur or masseuse. They signify membership in a society which for thirty-one years has aimed at providing a one-portal entry to the profession for all those who practice physical treatment.

"Although the council fully realize that the possession of a certificate is no guarantee of qualities which elude all mechanical tests, yet it may safely be accepted as proof that a supervised course of training has been diligently followed, and that a professional examination of high standard has been passed.

"Our hope is that you will read the following pages, and that, when prescribing physical treatment, you will bear in mind the claims of the members of the C. S. M. M. G."

In a recent number of the Journal of the Chartered Society of Massage and Medical Gymnastics, the examinations for June, 1928, were published. It is well to think seriously upon them and the foregoing letter:

CONJOINT EXAMINATION

THEORY

Five questions only to be answered.

1. Describe the different forms of Tapôtement and mention their effects.

2. Which are the reflexes generally looked for in patients suffering from nervous disorders? Mention some conditions in which they are exaggerated and some in which they are diminished, explaining why these alterations occur.

3. What are the different forms of active movement? What are the physiological effects of active movements?

4. Why is abdominal massage of value in: (*a*) anaemia; (*b*) rickets; (*c*) rheumatoid arthritis? Why is it of doubtful value in the treatment of a patient suffering from hemiplegia due to cerebral hæmorrhage?

5. Give in detail the muscle work involved in the following position and exercises: (*a*) standing fundamental position; (*b*) standing alternate knee-raising; (*c*) standing alternate side-bending.

6. Describe (*a*) the movements that take place in deep inspiration; (*b*) the effect of these movements on the position of the abdominal organs.

TREATMENTS

Five questions only to be answered.

1. How would you treat: (*a*) neuralgia of the sciatic nerve? (*b*) neuritis of the sciatic nerve?

2. Describe the treatment of a child of five years of age: (*a*) a fortnight after the removal of tonsils and adenoids; (*b*) a month after the operation.

3. What precautions should be taken in treating: (*a*) separation of the lower epiphysis of the humerus; (*b*) torticollis of rheumatic origin.

4. State the aims and methods of treatment in the following case:

A patient of fifty suffering from valvular disease of the heart: (*a*) with failing compensation, while still in bed; (*b*) after two months' treatment, compensation established, and coming to the gymnasium.

5. Write a table of exercises suitable for a child of eleven years of age who has a right dorsal left lumbar scoliosis with slight structural changes. The child is not very strong, and has already had three months' treatment.

6. What form of physical treatment might be given for a case of chronic colitis when the patient is not confined to bed?

ANATOMY AND PHYSIOLOGY

Compulsory Question—

1. How are the waste products of muscular activity excreted from the body?

Four of the following questions to be answered.

2. Give the attachments, nerve supply and action of the muscles of the calf of the leg, deep to the gastrocnemius and soleus.

3. Describe fully the mid-tarsal joint. What movements take place here?

4. Describe the abdominal aorta. Give its surface marking, and briefly indicate the distribution of its branches.

5. Give the course and relations of the left vagus nerve.

6. Trace the course of the lymph from the left hand to the heart, stating the position of any glands traversed.

MEDICAL GYMNASTICS EXAMINATION

THEORY

Five questions only to be answered.

1. What do you know about the condition known as Winged Scapulae? How would you treat it?

2. Describe two different forms of Talipes and give the treatment by medical gymnastics of one of them.

3. Analyze the muscle work in walking.

4. What symptoms, and what changes in the shape of the chest, occur in emphysema? Write a gymnastic table for a man of forty

suffering from this disease. Give your reasons for the choice you make of exercises.

5. What effect may weakness of the muscles of the abdominal wall and pelvic floor have upon the general health? What treatment may be given to improve the condition?

6. State briefly the aims of treatment in the following conditions: (*a*) chorea; (*b*) locomotor ataxy (Tabes Dorsalis). Give three exercises for each condition, giving reasons for your choice.

MASSAGE EXAMINATION

THEORY

Five questions only to be answered.

1. Describe the treatment of the shoulder after reduction of a dislocation, but with partial paralysis of the deltoid muscle.

2. Describe the treatment of sciatica by massage and movements.

3. Describe the changes that take place in inflammation. What are the signs corresponding to these changes?

4. What treatment is likely to be ordered for: (*a*) a nerve recently sutured; (*b*) a patient convalescent from thrombosis?

5. Why is abdominal massage of such paramount importance? How does it differ from other massage in its effect on the circulation? Illustrate your answer by explaining its effect on the cerebral circulation.

6. What are the effects of: (*a*) effleurage; (*b*) stroking. When are they valuable and when contraindicated?

ANATOMY AND PHYSIOLOGY

Compulsory Question—

1. How is fat digested, absorbed, and stored in the body?

Four of the following questions only to be answered:

2. Describe the ankle joint.

3. Describe the internal rotators of the thigh.

4. Give the course, relations, and branches of the ulnar nerve.

5. Give the surface markings of: (1) the stomach; (2) the superficial femoral artery; (3) the internal jugular vein; (4) the upper border of the brachial plexus.

6. Describe a typical rib.

MEDICAL ELECTRICITY EXAMINATION

Four of the following questions to be answered.

1. Given two spheres (A) and (B) both insulated from earth. (A) has a positive charge, (B) is uncharged. Explain how to charge (B) from (A): (1) by conduction; (2) by induction. State the final electrical condition of both spheres in each case.

2. What is meant by the Reaction of Degeneration?

A medical practitioner has asked you to prepare the apparatus and the

patient in order that he may take the electrical reactions in a case of infantile paralysis, involving the anterior tibial group of muscles. Explain exactly how you would prepare the patient and also give a list of the apparatus which would be necessary.

3. What are the essentials for obtaining an induced current? What methods are used for altering the strength of this current?

4. In a case of Muscular Atrophy, affecting the fore-arm and hand, treatment by means of the interrupted Galvanic Current has been ordered for the Median and Ulnar group of muscles. Describe how you would carry out the treatment. Mention the nerve supply of the muscles and draw a diagram showing their motor points.

5. Describe in detail the Static Transformer, mentioning any types you know and any apparatus in which they are used. How is the voltage and amperage of the current altered by this piece of apparatus?

One of the following questions to be answered.

6. Mention the muscles which give expression and movement to the face. Give in detail the branches of the nerve supplying these muscles.

7. Name the structures entering into the formation of the shoulder-joint, and give the action of the muscles which move this joint.

EXAMINATION FOR TEACHERS OF MEDICAL ELECTRICITY

PHYSICS

Three of the following questions to be answered.

1. Explain the working of a Motor Transformer: give diagrams.

2. Describe, as to a class, the Ionic Theory of Electricity, giving examples and mentioning any experiments which prove the transmigration of Ions through the tissues of the body.

3. What is an Electro-Magnet? How would you demonstrate its properties to a class?

4. Describe, and give diagrams of, a volt meter, explaining its uses and method of employment.

ELECTRO-THERAPY

Three of the following questions to be answered.

5. Describe, as to a class, the administration of a full-length sinusoidal bath to a child. What special dangers may attend the use of this bath, and how would you prevent accidents?

6. What is Radiant Heat? What are its physical properties, and what class of case is it likely to benefit?

7. Describe fully any treatment you know for Spasmodic Torticollis of the Sterno-Mastoid muscle.

8. Write notes of a lesson on the treatment of Chronic

Synovitis of the knee-joint both by the galvanic and by the Faradic currents.

ANATOMY AND PHYSIOLOGY

Five of the following questions to be answered.

1. Give the course and distribution of the facial nerve after leaving the skull.
2. Give an account of the loss of muscular power and cutaneous sensation resulting from division of the external popliteal nerve.
3. Describe the pectoralis major muscle. State what you know of the minute structure of voluntary muscle.
4. Give the position and relations of the pancreas. State what you know of its functions.
5. Describe the ligaments of the shoulder-joint.
6. Give the course and relations of the portal vein.

PRINCIPLES OF TEACHING

Five questions only to be answered.

1. "Without the feeling of some difficulty or problem to be solved no real thinking takes place." Examine this statement and show how you would apply the truth it contains in the training of your students.
2. Compare the intelligent learning of an operation (such as the use of a piece of electrical apparatus) with the acquirement of a habit through repetition (such as typing or cycling).
3. What do you consider to be the function of lesson notes? Indicate the principles upon which you arrange your notes, and give an example.
4. It is a common experience that it is easy to attend to some things and difficult to attend to others. Suggest psychological grounds for this difference and show their bearing upon teaching practice.
5. What are the functions of questioning in class teaching? Illustrate fully by reference to your own experience as a teacher or your observation of other teachers.
6. What do you understand by good discipline? How far is a teacher of students concerned with problems of discipline?
7. How may the criticism of a student's work be made of the greatest help to her? Answer with reference to your own experience and deal with at least *two* types of student.

Having recently read the article, "Gleanings from a Visit to Europe," in the August issue of THE PHYSIOTHERAPY REVIEW, I am prompted to say a few words regarding the clinics in the good old U. S. A.

At every port of call, I followed with the keenest interest the three wise P. T.'s from the West, Mathea Boxeth, Marguerite Irvine

and Nina Haugen. How fortunate they were to be able to see so much of professional interest, and to travel so far afield in Europe.

Ralph Waldo Emerson has said that "America is another name for opportunity." The whole history of the country proves this to be true. This statement holds good in our own field of Physiotherapy. Just about ten years ago the word Physiotherapy (Physical Therapy, if you prefer it) was coined; now the word is known from coast to coast, three thousand miles of continent. It was coined to designate the combining of the various physical forces to be used therapeutically, with the exception of electrotherapy (that great force which has been present but hidden from human understanding until comparatively recent years); the other measures are by no means new.

There is much truth in Mathea Boxeth's last paragraph in which she states that as much can be found of interest in Physiotherapy in this country as can be found in Europe.

The August number of THE PHYSIOTHERAPY REVIEW gives us the names of no less than ten organized chapters of the American Physiotherapy Association, and another chapter has been added since the August issue was published. Our slogan must continue: "In union there is strength," so all you folk living in large or small cities, gather your force of working P. T.'s and form your own chapter; you will find it well worth while.

Do you know that if three wise P. T.'s from Europe should land in New York and determine to cross this continent in order to see the work being done in Physiotherapy, I imagine they would go back much impressed with the zealous type of worker, and with the interesting work that they had seen in the hospitals and in the various clinics.

Starting in New York, they would get some eye openers, meeting some of our most prominent P. T. leaders, and in the work conducted in the hospital clinics, too many to enumerate in New York City and in New Jersey, not to mention many large, well organized private clinics. Next, they might stop off at Rochester before leaving New York State and get Ida Rapin to show them some of the good work that she is doing under Dr. Plummer's able guidance, or they might go on to Philadelphia and see, through some of our members of the Pennsylvania Chapter (which is one of our most progressive and flourishing chapters), some of the excellent Physiotherapy being done in that state, both in hospitals and by private individuals.

On to the Capitol to find more of our busy P. T.'s, Louise Lippitt (who took the first consignment of R. A. P. T.'s overseas), Mary Castleman and Grace Courter, who will tell you all about getting a job if you should need one; then Walter Reed, who holds so much of P. T. interest and Emmy Lou Vogel, who is always

interested to show her P. T. department, and there are still some of our old army buddies stationed there.

Keep going South if you want to see more excellent Physiotherapy. Just between ourselves, the Southern orthopedic men are pretty fine, and they want the best P. T.'s they can procure in their offices and in their hospitals.

Back again North (but more of Boston later). Rhode Island may be a small state but she boasts of a P. T. chapter all her own. Good for you, Rhode Island; here is wishing Dorothy Hislop, chapter president, much success.

On we journey through lots of territory holding worth-while Physiotherapy but we must hasten on to Cleveland and talk with Rachel Farnsworth, the president of that chapter, because we all know from our sojourn there two years ago, at the convention, that Cleveland, in fact the entire state of Ohio, is actively interested in Physiotherapy, crippled children and industrial accident work.

Chicago will be our next stop, because for two years it has been the home of our much esteemed association officers. We can get so much information from Gertrude Beard at the Wesley Hospital, not only regarding her departmental work, but on so many P. T. matters, with the snappy ex-secretary, Ida Hazenhyer, and the old purse-holder, Marion Swezey, that we surely have a tower of strength regarding many matters pertaining to Physiotherapy. We must be sure to have our guests visit Battle Creek, Mich., for that in itself is a home of Physiotherapy too important to miss.

But we must be en route once again, and this time we will stop off at Minneapolis, as our last flourishing convention was held there recently. This city is all agog, and we will be taken on from there to visit that big important Mayo Clinic and have Rosalie Donaldson tell us of her interesting work.

Now we must take a non-stop flight across so many states that could furnish us with P. T. news, but because time is so important a factor, we must go direct to Washington, for Elsie Childs, the president of the Washington State Chapter, and our good old army buddy, is holding out her hand in greeting at Seattle, and Ruth Babb, the former president of the Oregon Chapter, wouldn't like it at all if we didn't go over to the Tacoma General Hospital and see all the good work that she is doing there. But we must be on our way to Portland, where Eleanor Hanson, the present president, and the Applegate twins are busy in the P. T. department of the Oregon State Industrial Accident Commission.

Our first stop across the Shasta Mountains will be at San Francisco. There reside our new officers and we would wish them well and shake their hands in cordial greeting. Ever since the early association days, Hazel Furscott has been an active, keen member

and now we would have her know that we have confidence in her and in her judgment and that we know we are going to continue to do great things. Then we have another good old army overseas friend in office, Vice-President Beulah Rader—a fine combination—our president, vice-president, with Charlotte Ballard and Florence Burrell, secretary and treasurer. We should like to thank them in advance for all the good voluntary work that they are undertaking in our behalf.

Down we go with our three guests to visit Los Angeles and call upon Lily Graham and her fine staff of P. T.'s at the Children's Hospital. Dr. Lowman we must see, for we want him to show us his pool for under-water treatment in cases of paralysis, and Lucile Grunwald, at the University of California, Southern branch. The last hearing, she was writing her thesis on Physiotherapy, the first ever written in this country, or maybe elsewhere.

Let us retrace our steps across the continent and land in Beantown, stopping long enough to see something of the P. T. work in Boston. Naturally, we turn to the Massachusetts General Hospital. Just step inside and ask for Ruth Dupee; she will be delighted to show you her Physiotherapy department in the orthopedic section, organized years ago by that pioneer, Dr. Bucholz, and carried on most efficiently by Miss Dupee. Do not leave until you have seen some of Dr. Low's infantile and spastic cases treated. Marjorie Sellars is in charge and she will go to no end of trouble to show all she has of interest in her department.

We must next visit The Children's Hospital. Here we see Physiotherapy confined to nerve work and divided into two sections, one for the treatment of infantile paralysis, the other for the brain and cord lesion types.

Janet B. Merrill, our first secretary-treasurer, is in charge of the infantile paralysis and by all means do not miss seeing her beautifully organized department and her muscle training in both pre- and post-operative work, and be sure you don't leave the Children's Hospital until you have visited Mary Trainor, and seen some of her fascinating kindergarten therapy started many years ago by Miss Jenny Colby, and carried on most efficiently for years by Miss Trainor.

Now thread your way amid labyrinths of corridors in the Boston City Hospital to our old beloved chief of army days, Dr. Frank B. Granger. There you will find Ruth Wheeler always right on the job and ready to show you a diversity of cases, and prescriptions carried out most carefully.

If you want to see up-to-date electrical equipment, you have it, every description of air-cooled and water-cooled ultra violet lamp and every description of machine for each current and for every conceivable modality.

Keep going for a few hundred feet, and you will find the Homeopathic Hospital. You must not leave Boston without seeing the Physiotherapy in the orthopedic out-patient department, for Clara Eisenbery, our present Massachusetts state president, is in charge. Every type of case for Physiotherapy is handled, the old arthritic cases, and the tiny obstetrical paralysis babies needing kindergarten neuromuscular training, each and all getting what they individually require, not only the best in Physiotherapy but also the little human touch included.

Now we bid you farewell from our shores, you three European P. T.'s, trusting that you have received inspiration from contact with us here who are struggling to attain the highest possible standard in our profession, and we know that having had contact with you and that discussing with you mutual ideas, and ideals, has undoubtedly strengthened our foothold and broadened our outlook and so, Sister P. T.'s of Europe, adieu!

M. McM.

A STUDY OF PHYSIOTHERAPY AS A VOCATION

BY LUCILE R. GRUNEWALD

It is with a feeling of great pride we print this thesis, the first, as far as we know, on Physiotherapy as a profession. It shows the steady trend of our chosen work and will be an encouragement and inspiration to all.

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I. Introduction:
Statement of problem, including objectives.
Definition of Physiotherapy.

II. Method of procedure used in this study.

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IV. Presentation and interpretation of data based on Objective II: To determine the need of standardization of the practice in and the training for Physiotherapy.

V. Presentation and interpretation of data based on Objective III: To determine where the training in Physiotherapy can best be offered, and the length and content of a suitable course.

VI. Presentation of data based on Objective IV: To suggest legislation determining the requirements for licensing the practice of Physiotherapy.

VII. Summary and general conclusions.

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CHAPTER I

INTRODUCTION

The Problem.—The general problem of this thesis is to make a study of Physiotherapy as a distinct vocation and to make a study of ways and means of standardizing the educational requirements and the practicing of Physiotherapy.

Most physiotherapists are either graduate nurses or physical education teachers who may have had, in addition to their specific training, a short course of a few weeks or a few months in Physiotherapy. There is also a group of people practicing Physiotherapy who had a reconstruction aide course during the war. Then there is a third group which is not recognized by the medical profession and is seemingly unqualified to practice any branch of Physiotherapy.

The problem has four objectives:

I. To determine whether the demand for Physiotherapy is sufficient to classify it as a distinct vocation.

II. To determine the need of standardization of the practice in and the training for Physiotherapy.

III. To determine where the training in Physiotherapy can best be offered (special school of Physiotherapy, school of physical education, university, etc.), and to determine the length and content of a suitable course.

IV. To suggest legislation, determining the requirements for licensing the practice of Physiotherapy.

The realization of the need for such a study came as the result of the writer's twelve years of experience and association with physiotherapists, and assistant to orthopedic surgeons; one year's experience as an assistant in a clinic of an orthopedic hospital; an experience of one year and a half as a student assistant in the orthopedic clinic of a children's hospital; six weeks in summer session as an assistant in therapeutic exercise in a Physiotherapy course at Harvard Medical School of Graduates; and thirteen years' experience in training university students in therapeutic gymnastic classes and in supervising these students in hospitals, clinics and corrective centers.

Definition of Physiotherapy.—Physiotherapy is defined in many ways. It has many branches and in some cases one branch is defined and in other cases several branches are defined, usually giving one branch more emphasis and importance. The following definitions from a variety of sources are listed below. These may serve to give a more comprehensive understanding of Physiotherapy.

"Physiotherapy may be defined as the employment of physical forces of nature in the treatment of injury and disease."[1]

"Physiotherapy is that phase of regular medical practice which limits itself in the treatment of injury and disease to the use of physical forces of nature; namely electricity, light, heat, exercise and massage. Among all of these therapeutic agents the various modalities of electricity have the predominating place."[2]

"Physiotherapy is defined as the use of actinotherapy, hydrotherapy, mechanotherapy, thermotherapy, and electrotherapy, exclusive of the X Ray."[3]

"Physiotherapy embraces the treatment of disease by physical measure in contradistinction to medical and surgical procedure. It is used in conjunction with and as adjunct to the latter."[4]

"The Pennsylvania State Board of Medical Education and Licensure has adopted the term Physio-Therapy under which to license certain practitioners of medicine. 'The Board has defined Physio-Therapy especially to include:

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[1]Stewart, Harry Eaton. *Physiotherapy.*
[2]Stewart, Harry Eaton. *Bulletin* of the New Haven School of P. T., year 1927-1928.
[3]University of the State of N. Y. *Handbook* 9, Higher Education—Medicine (including Osteopathy, Physiotherapy). "Laws, Rules and Information," June, 1927.
[4]*Prospectus of the Hospital Training Course in Physiotherapy for Aides.* Army Medical Center, Walter Reed General Hospital, October, 1927.

"'1. Any treatment having any manual, physical, mechanical exercise, apparatus, appliances or treatments for base including: (a) massage, (b) medical gymnastics, (c) Swedish movements, (d) mechano-therapy, (e) vibro-massage, (f) any other manual, physical, mechanical method of exercises, apparatus, appliances or treatments not here specified.

"'2. Any treatment having water, air, cold, light, sun, earth for a base including (a) hydro-therapy, (b) helio-therapy, (c) thermo-therapy, (d) any other treatment not here specified but having water, air, heat, cold, light, sun, earth for a base.

"'3. Any treatment having electricity for a base, including (a) electro-therapy, (b) electro-massage, (c) electric light baths, (d) any other treatment having electricity for a base.'"[5]

"Physiotherapy has distinct branches, such as manipulation of joint and muscle, commonly spoken of as massage, therapeutic or corrective exercise, electro-therapy with all of its various modalities, and hydro-therapy. A most interesting phase of the work is combining for prescription the various branches—one case may respond to certain combinations, whereas another may require an entirely different combination to obtain the best results; in this alone there is an interesting and absorbing opportunity for scientific research, and the possibility of specializing in any of the subjects."[6]

As the last definition explains, there are distinct branches in Physiotherapy or Physical Therapy or Therapeutics, as it is sometimes called. "Physical therapeutics is, by no means, a new form of therapy, although hitherto the application has been limited chiefly to the orthopedic field and the chief branches used were massages and exercise. It has been remolded in a scientific manner due to our increased knowledge of physiology, chemistry, physics and electricity."[7] With the advent of the World War its therapeutic usefulness became manifest and it was given a great impetus. "The United States Army Medical Corps, through the Physiotherapy Division of the Reconstruction Department, made it possible from March, 1918, to March, 1920, for about 86,000 disabled soldiers to have the benefit of over three and one-half million treatments in the General Army Hospitals and camps throughout the United States. In addition, hundreds of men in France were able to receive treatments."[8] Two years ago the American Medical Association created a Council of Physical Therapy, which gave to Physical Therapy a standing as a therapeutic measure along with medicine and surgery.

[5]Department of Public Instruction—State Board of Medical Education and Licensure, Harrisburg, Pa., *Rules and Information. Physic Therapy.* Bulletin No. 19 M., January, 1926, P. 11.

[6]McMillan, Mary. "Physiotherapist." *Mary Hemenway Alumnae Bulletin.* Bulletin No. 19, P. 21.

[7]McMillan, Mary. *Massage and Therapeutic Exercise.* P. 9.

[8]McMillan, Mary. *Massage and Therapeutic Exercise.* P. 9.

At this present moment the Council on Physical Therapy of the American Medical Association is engaged in securing information in order that it may be able to outline in an intelligent manner suggested basic training for Physiotherapy aides. In June a report will be published on this investigation.

In this study the term Physio-Therapy will be understood to include actino-therapy, hydro-therapy, mechano-therapy, electro-therapy, massage and therapeutic exercise.

CHAPTER II

METHOD OF PROCEDURE IN THIS STUDY

In making this study the writer made a survey of the literature concerning Physiotherapy and its place in the field of treatment. Conferences were held with the head physiotherapists at the Los Angeles Children's Hospital, General, and Orthopedic Hospital; also with several physiotherapists doing clinic and private work. At one of the monthly meetings of the Southern California Physiotherapy Association, a discussion was led by the writer on Physiotherapy as a distinct vocation and on the standardization of training.

Following these conferences, a questionnaire was formulated and sent to 236 physiotherapists in all parts of the United States and Canada. The names of the physiotherapists were secured from the rosters of graduates from the New Haven School of Physiotherapy, the Boston School of Physical Education, the Hygiene and Physical Education Department of Wellesley College and from the membership lists of the Northern and Southern California Associations of Physiotherapists. A letter was sent with each questionnaire and in that letter a request was made for names of other physiotherapists who would be interested in assisting in this study by answering the questionnaire. Fifty-one of the names were received in that way.

On the following pages will be found a copy of the letter and the questionnaire.

TABLE 1—COPY OF LETTER SENT TO 236 PHYSIOTHERAPISTS

University of California at Los Angeles, Jan. 14, 1928.

.....;

.....;

.....;

My dear Miss .....;

The following questionnaire is being sent to a number of successful physiotherapists for the purpose of acquiring first hand information that would be helpful in developing a comprehensive course in Physiotherapy as a major subject in a university, leading to a degree in science.

We shall appreciate your cooperation in filling out in detail the enclosed form. Your signature is unnecessary as the data from it is to be strictly impersonal.

We hope this study will result in raising our profession to a higher level by the standardization of the education and training of its members.

Do you know of any other physiotherapist in your city or other cities to whom I might send the questionnaire?

Very sincerely yours,

.....,

Assistant Director of the Department of Physical Education for Women.

TABLE 2—COPY OF QUESTIONNAIRE

QUESTIONNAIRE

I. Education and Training

1. High school graduate. Yes..... No.....
2. Underscore and give approximate time spent on each science. No. of years: Biology..... Chemistry..... Physics..... Physiology..... General Science.....
3. General normal school graduate. Yes..... No..... No. of yrs..... Underscore and give approximate time spent on each science (No. of wks., no. of units, no. of semester hrs. or no. of yrs.): Biology..... Chemistry..... Physics..... Physiology..... General Science.....
4. College or university education. No. of yrs..... Degree..... Underscore and give approximate time spent on each science (No. of wks., no. of units, no. of semester hrs. or no. of yrs.): Biology..... Chemistry..... Physics..... Physiology..... Bacteriology..... Zoology.....
5. Nurse's training. No. of yrs.:..... R. N..... Name of school..... Underscore and give approximate time spent on each science. Biology ..... Chemistry..... Physics..... Physiology ..... Bacteriology..... Zoology..... Anatomy..... Pathology.....
6. Physical Education Training. No. of yrs.:..... Name of school..... Underscore and give approximate time spent on each science. Biology ..... Chemistry..... Physics..... Physiology..... Bacteriology..... Zoology..... Anatomy..... Pathology..... Kinesiology.....
7. Reconstruction aide training. Length of course.....
8. Special courses in Physiotherapy. Months..... Years..... Branch of Physiotherapy..... Place .....
9. Underscore courses taken in Psychology: General—Abnormal—Child—Clinical—Experimental—Physiological—Social.
10. In all your training what courses have been most valuable to you in your practice of Physiotherapy.....
11. In what ways has your training been insufficient in your practice of Physiotherapy .....

II. Requirements in a course in Physiotherapy.

1. In a standardized course, how many years beyond high school are desirable?
2. Underscore where course should be given: Special School of Physiotherapy—Physical Education School—Dept. of Physical Education in Univ.—Nurse's Training School—Hospital—Training School—Major Course in Univ.—Any other school.....

3. What subjects are most essential in such a course?.....
.....
.....

4. Enumerate outstanding personal characteristics essential to a successful physiotherapist.....
.....

III. Experience.

1. Nursing: Yrs..... Teaching yrs.....
Subjects taught.....
2. Underscore below places of experience and give yrs. and types practiced (electrotherapy, hydrotherapy, massage and therapeutic exercise or general—including all four). Private Practice: Yrs.....
Types.....
Hospitals: Private—yrs....., Public—yrs.....,
Army—yrs....., Navy—yrs....., Clinics: Private,
Public, yrs..... Types:.....
Physician's Assistant: Orthopedic—General—Practitioner—Surgeon—
Physiotherapist. Yrs.....
Types: .....
Teachings: Private or Public (Ele., H. S., Univ.) Special Schools,
yrs..... Types.....
3. If in private practice, are all your patients referred to you by physicians?
.....
4. Present position:.....
Title .....
5. Is your work directed specifically by physicians?.....
6. Are you given the responsibility of deciding on the specific type and kind of treatment?.....
7. Are you a member of the American Physiotherapy Association?.....
Of a state Physiotherapy Ass'n..... Of a local Ass'n.....
8. What methods are you using to measure results in your treatment?.....
.....
9. Do you think there is a growing demand for Physiotherapy?.....
Reasons .....
.....

IV. Salary and Schedule of Time.

1. Your present yearly income:.....
2. Hours of work per day..... No. of days per week.....
3. Average number of treatments per day.....
4. Number of weeks vacation (granted or taken) during year.....

V. Suggestions.

1. Would you like a title other than physiotherapist?.....
State other title.....
2. Have you any other suggestions—general or specific, which you would like to add?.....
.....
.....

Further correspondence was held with such leaders in the field of Physiotherapy as the chief aide (during the World War) of the Reconstruction Department at the Walter Reed Army Hospital, Washington, D. C.; the head of the Physiotherapy work in the Veterans' Bureau, Washington, D. C.; the director of the New Haven School of Physiotherapy; the president of the American Physiotherapy Association; the chief physiotherapist of the Cleveland Clinic; and the director of the Boston School of Physical Education,

who has introduced a Physiotherapy course into the third year at her school. From these leaders an expression of opinion was secured on the demand for Physiotherapy and on its standardization.

Personal interviews were held with two leading orthopedic surgeons in Los Angeles, the surgeon-in-chief of the Orthopedic Hospital, and one of the orthopedic surgeons at the Children's Hospital. The kind and amount of education and training needed for physiotherapists was discussed. Letters were sent to nine other orthopedic physicians and to two of the leading physicians practicing physical therapeutics in New York and Boston, asking them questions on demand and training of physiotherapists. Letters were also written to sixteen well-known general practitioners in Southern California, asking them if they referred patients to Physiotherapy aides; if Physiotherapy were standardized, would they refer more patients to them; and did they think the demand for Physiotherapy and the type of work would warrant four or five years of university training and education?

By conferring with the Federal Civil Service Commissioner of Los Angeles, a circular of information on the examination for prospective Physiotherapy aides was received. Requests for circulars of information on requirements, etc., were sent to the Civil Service Commissioners of some of the larger cities in the United States, such as New York, Philadelphia, Boston, Detroit, St. Louis, Chicago, Seattle and Los Angeles.

Bulletins on courses of study were secured from schools of Physiotherapy, such as New Haven School of Physiotherapy, Philadelphia Orthopedic Hospital, Water Reed General Hospital, Boston School of Physical Education and New York University. Bulletins were also received from schools of nursing and departments of physical education in some of the state universities, i. e., California, Illinois, Iowa, Michigan, Oregon, Washington and Wisconsin; and from Teachers College, Columbia; and from the School of Nursing of Yale University. These bulletins were secured in order to make a comparative study of courses in these various departments with a view to developing a course in Physiotherapy in universities without adding any or many additional courses outside of the specific Physiotherapy courses, such as electro-therapy, and hydro-therapy.

With the intention of drawing up state requirements and a proposed act licensing physiotherapists, copies of law and legislative acts governing the practice of Physiotherapy were secured from various state departments such as Connecticut, Illinois, Massachusetts, New York, Ohio, Pennsylvania and Wisconsin. Also the California Osteopathic Act[9] was secured to use as a sample in drawing up a legislative act.

[9]State of California, *Osteopathic Act*. State Printing Office, Sacramento, Calif.

CHAPTER III

PRESENTATION AND INTERPRETATION OF DATA BASED ON OBJECTIVE 1: TO DETERMINE WHETHER THE DEMAND FOR PHYSIOTHERAPY IS SUFFICIENT TO CLASSIFY IT AS A DISTINCT VOCATION

As a step in determining whether the demand for Physiotherapy is sufficient to classify it as a distinct vocation, the following question was asked in the questionnaire: "Do you think there is a growing demand for Physiotherapy? Please give reasons." Seventy-four of the seventy-six replies were in the affirmative. The reasons given will be classified in groups according to similarity of replies.

First group—physicians and surgeons beginning to recognize the value of Physiotherapy:

Medical profession has proved its worth (worth of Physiotherapy) to themselves and their patients.

Medical men becoming educated to its value.

Medical profession becoming more cordial.

More and more doctors becoming interested in it.

Physicians seeing possibilities of new methods that proved of value during the war.

Doctors putting more value on results accomplished.

Value being recognized by more physicians and surgeons.

Hearing about a good many physicians using it.

Getting known among the doctors and results proving satisfactory.

More local physicians engaging Physiotherapy technicians.

Increase in Physiotherapy equipment bought by physicians.

Serious research by the American Medical Association and articles in the American Medical Association Journal.

Physicians realizing that with such treatments patients recover quicker, more completely and with less pain.

That general medicine and surgery is waking up to its value as well as orthopedic surgeons and neurologists.

Doctors noticing difference in and results with use of Physiotherapy.

Physicians learning the value of Physiotherapy and using it more.

Physiotherapy still rather new but physicians getting away from medicine and Physiotherapy gradually growing and developing.

Being recognized by all medical associations and being appreciated by them as an adjunct to treatment in all general medicine and surgical cases.

Physicians realizing its value.

Most doctors realizing it is necessary adjunct and if done scientifically results are usually obtained.

Have noted the tendency of doctors to employ physical measures more and more frequently than heretofore. Doctors more easily converted to such treatment now than even a short time ago.

The benefits derived from Physiotherapy being generally realized among the medical profession.

Never before have the general practitioners been concerned and now many are adding an electrical machine or lamp to their equipment.

More physicians using it.

Increasingly used by doctors for various types of diseases and injuries because of doctors' successfully proven experiments and results with it.

Physicians are realizing more and more the value of Physiotherapy. A good therapist is reason for a growing demand if she gets results.

Articles on Physiotherapy found in all leading medical journals.
Physicians are being educated to its use and need for it.
Becoming more generally used by all doctors.
Physicians are realizing that they obtain better results for their patients by using Physiotherapy.
More doctors becoming gradually convinced as to the good results in certain modalities used by Physiotherapy.

Second group—the public beginning to recognize the value of Physiotherapy and demanding it.

Becoming known among the public and doctors and results proving satisfactory.
People gradually realizing logic of physical methods against drugs.
The people becoming educated in its value.
Laity believe in it and wish it.
People demanding more drugless therapy. The value of exercise and proper body mechanics being realized more and more each day
Public demands it, owing to the good already done by competent people.
Becoming better known by the public through proving its worth.
Increased knowledge of its value in connection with healing.
Both doctors and public beginning to recognize Physiotherapy more.
Layman demands it.
A growing knowledge among the general public that certain defects are cases for remedy and cure with the use of Physiotherapy.
The value of it is being realized by the public.

Third group—hospitals adding Physiotherapy departments.

All leading hospitals putting in departments of Physiotherapy.
Have opened and watched the growth of several hospital departments of Physiotherapy. No hospital of any rank is complete without a first class Physiotherapy department.
Many hospitals establishing departments of Physiotherapy.
With a decided increase in the number of patients referred to the Physiotherapy department in the general hospital, there has been an increase in equipment and in number of assistants in the department.
New departments being opened in hospitals heretofore without any Physiotherapy facilities or with very limited ones.

Fourth group—Physiotherapy being considered of social and economic value.

Especially industrial insurance companies are becoming more interested in the quickest method and yet most valuable, to bring patient back to normal.
It has proven itself to be a most valuable adjunct to surgery, medicine and nursing; and in industrial injuries definitely proven to shorten the time of disability.
Physicians realize Physiotherapy shortens the period of disability, prevents muscle strain after long illnesses and produces results where medicine fails.
Disability time is shortened by Physiotherapy and it is also a prophylactic.
It is being recognized by boards of education. More people are realizing that in order to be efficient, health is a first requisite.
General increase in interest in health and physical welfare has promoted physical examination, particularly of children, and these examinations have indicated the need of Physiotherapy measures.
There is a crippled children movement in various states and counties and in Shrine organizations, also in city service clubs which has brought about a demand for Physiotherapy measures.

From the examination in schools, foot and postural difficulties are found prevalent and the need of treatment and correction of these is being recognized by boards of education, increasing the demand for Physiotherapy.

Fifth group—Increasing demand for physiotherapists.

Supply does not care for demand, because we find every year more public and private hospitals and doctors in need of trained physiotherapists.

With orthopedic surgeons becoming more numerous, there is a greater need for assistant physiotherapists.

Orthopedic need of Physiotherapy for postoperative work.

More work in orthopedics every year and Physiotherapy a distinct part of it.

If kept ethical, men of good standing would use it increasingly.

Impossible to find properly trained physiotherapists to fill positions in doctors' offices, hospitals and schools when frequently requested.

The above statements confirm one in the opinion that the demand for Physiotherapy is definitely growing and that this demand might warrant making Physiotherapy a distinct vocation or profession.

Some of the answers in reply to the letters sent to general practitioners and orthopedic physicians in Southern California and to several physicians who are leading physiotherapists in the East seem to confirm the fact that there is a growing demand for Physiotherapy. One of the Los Angeles physicians said: "If we had more trained workers the demand would be greater. With the exception of the Los Angeles General Hospital, which is well equipped and standardized, but with its treatments available only to its inmates, Los Angeles is limited in Physiotherapy and is badly in need of workers." All but two of the physicians refer patients to Physiotherapy aides or to departments of Physiotherapy in hospitals. One of the leading specialists thought there was a demand for aides among general practitioners because of increased instruction, both postgraduate and in medical societies; also due to the "pressure of high-powered salesmen." Two other specialists rather doubted the demand for aides among general practitioners because the general practitioner "doesn't know enough to separate them" and "because general practitioners do not understand the importance of physical therapy." One of the army physicians directing the work of Physiotherapy in the Veteran's Bureau writes: "The bureau has on duty about 200 Physiotherapy employes. It is difficult to obtain a sufficient number of well trained technicians. I do not know how many are employed in the public health service, army, navy and national soldiers' homes. . . Also every little while requests are received from physicians for assistance in finding well trained technicians for work in hospitals or private offices. My observation leads me to believe that for some time the demand is likely to exceed the supply of Physiotherapy aides who possess the proper qualifications for this work." It is interesting to note that the army medical center at the Walter Reed General Hospital in October, 1927, started a hospital training course in Physiotherapy for aides. There is no tuition fee and reference books are furnished. Quarters, rations and a liberal laundry allowance are provided by the

hospital and a salary of $5.00 a month is paid. However, students must agree, prior to the training course, to accept on graduation appointment in any Physiotherapy department of the various United States Army General Hospital in which there is a vacancy and must remain in the service at least one year if needed.

The fact that the United States Army is providing a training course and that several schools of physical education, such as the Boston School of Physical Education, Bouve's School of Physical Education, and the Department of Physical Education in the School of Education of New York University are now offering courses for specialization in Physiotherapy also indicates that there is a growing demand for Physiotherapy and consequently physiotherapists.

"Because of the results achieved in the war emergency work, physical therapeutic measures have already found favor and the public is demanding that they be added to the science and art of healing wherever such treatment is indicated. . . . The United States Army Medical Department made it possible, from March, 1918, to March, 1920, for about 86,000 disabled soldiers to have the benefit of over three and one-half million treatments in the general army hospitals and camps throughout the United States. In addition, hundreds of men in France were able to receive treatments."[10]

Soon after the formation of the Reconstruction Department of the United States Army in the early part of 1918, "a demand arose for trained workers, both for the army hospitals in the United States and for overseas service. A special appeal was made to the recognized schools of physical education throughout the country, and short, intensive courses of instruction were arranged in order to train women to meet the demand. These special training courses fitted about 800 women for the Physio-Therapy Division. In June, 1918, the first overseas unit of Reconstruction Aides was ordered to France."[11]

"At the same time there was a small group of faithful women ministering to the needs of returned soldiers at the Walter Reed General Army Hospital in Washington, D. C., with whom I was privileged to be associated. As the need for more trained women became urgent, my work at Washington was interrupted for several months in order that I might assist in the training courses that were being given for women at Reed College in Portland, Ore.

"At the Congress of American Physicians and Surgeons in June, 1919, at Atlantic City, Dr. Harvey Cushing stated, 'This has come to the minds of all and mayhap a new profession for women, as important as the nursing profession, may arise through their invaluable services as Reconstruction Aides.' Undoubtedly the courses of instruction, along with a period of practical work, have provided for many women an introduction into a new field of service."[12]

[10]McMillan, Mary, *Massage and Therapeutic Exercise*. P. 10.
[11]Ibid.
[12]McMillan, Mary, *Massage and Therapeutic Exercise*. P. 11.

"An outgrowth of the successful use of Physiotherapy as applied to war and post war injuries" is, according to Dr. Stewart, "the modern application of physical remedies in the treatment of both athletic and industrial injuries. . . . In view of the vast receipts obtained from most modern athletic contests, especially football, the cost of installation and operation of a small but efficient Physiotherapy department is negligible. The object of such special care is, of course, the return to the game of injured players earlier than would otherwise be possible or the resumption of play by some who might have been incapacitated for some reason. Sufficient evidence of value of properly selected Physiotherapy in these injuries has been collected to justify the statement that they distinctly shorten recovery time."[13]

The importance of Physiotherapy in industrial accidents is clearly shown in the article, "Physiotherapy and Rehabilitation of the Physically Handicapped," by Dr. Henry H. Kessler, medical director, state of New Jersey, for the Rehabilitation Clinic. "The program of the state of New Jersey for the rehabilitation of the physically handicapped has for its aim the conservation of man power in industry. Through the establishment of six comprehensively equipped rehabilitation clinics throughout the state, New Jersey is more fortunate than other states in that the disabled worker may be returned to his former employment quicker and with less chance of having disabled physical or mental handicaps."[14] The rehabilitation clinics, "by the treatment of thousands of cases, have demonstrated the efficacy of the comprehensive programs of treatments which embrace the normalizing of human tissues and members through corrective surgery, physical therapy and physiological use of the affected parts. It has had an educational effect on the medical profession, hospitals and other institutions by this demonstration and these agencies have installed equipment for the proper and thorough treatment of injury cases. . . . When it is realized that 7,684 cases were thus rehabilitated, it would seem that the program and procedure were quite justified."[14]

Miss Mary McMillan, physiotherapist in the office of Dr. E. G. Brackett, Boston, in a paper given to the Army Morris Women's Club of Boston, members of which are graduates of the Hygiene and Physical Education Department of Wellesley College, invites them into this new profession of Physiotherapy. She says, "We can offer to you physical education graduates a most enticing life work, teeming with scientific and human interest, and one in which you are not merely working for your daily bread but also working towards a goal, that of creating standards in a new profession, a profession comparable in many ways to that of physical education, and an opportunity of inspiring the right kind of girls to join with us. . . . There are

[13]Stewart, M. D., Harry Eaton, "The Treatment of Muscle Injuries in Athletics." *American Physical Education Review*, May, 1928, P. 259.

[14]Kessler, M. D., Henry H., "Physiotherapy and Rehabilitation of the Physically Handicapped." THE PHYSIOTHERAPY REVIEW, September, 1927.

positions of dignity and responsibility as executive heads, teachers and workers, and an ever increasing demand for trained physiotherapists in doctors' offices, public and private hospitals, army and navy hospitals, and in War Veteran's Bureau. The supply must inevitably follow, so we invite you to come with us and help form the right standards to a most worthwhile, if new, profession for women that has come to stay."[15]

More articles in popular current magazines, published by physiotherapists, informing the public as to what "Physiotherapy" means, would educate the public in recognizing the place of Physiotherapy in the field of healing. Case reports published in medical journals would inform the general practitioners.

The interpretation of this data shows that there is enough demand to classify Physiotherapy as a distinct vocation.

[15]McMillan, Mary, "The Physiotherapist." *Mary Hemenway Alumnae Association Bulletin*, March, 1927. Pp. 21, 22.

(To be continued)

AMERICAN PHYSIOTHERAPY ASSOCIATION

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LIST OF PHYSIOTHERAPY SCHOOLS APPROVED BY THE AMERICAN PHYSIOTHERAPY ASSOCIATION, JANUARY, 1928

The New Haven School of Physiotherapy, 303 Whitney Ave., New Haven, Conn., Harry Eaton Stewart, M. D.

Philadelphia Orthopedic Hospital, 17th and Summer Sts., Philadelphia, Pa., Miss Jane M. Farrell.

Children's Hospital, Sunset and Vermont Aves., Los Angeles, Calif., Miss L. H. Graham.

Northwestern Medical School, 303 East Chicago Ave., Chicago, Ill., John S. Coulter, M. D.

Harvard Medical School, Longwood Ave., Boston, Mass. (Post Graduate Courses), Course No. 441, Miss Janet B. Merrill; Course No. 442, Miss Mary McMillan.

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